

NAS NORTH ISLAND - NAVY REGION SOUTHWEST NAVY ENVIRONMENTAL LEADERSHIP PROGRAM

CLEANUP

ZENON PERVAPORATION

LEAD ACTIVITY

Naval Air Station (NAS) North Island

STATUS

Completed

MISSION

Remediate contaminated groundwater

DESCRIPTION

The Navy evaluated a cross-flow pervaporation system developed by Zenon Environmental, Inc. The Zenon technology, using a membrane process, removes dissolved VOCs and some semi-volatile organic compounds (SVOCs) from contaminated groundwater. The technology was demonstrated at NAS North Island Site 9 under the U.S. Environmental Protection Agency (EPA) Superfund Innovative Technology Evaluation (SITE) Program during February 1995.

During the demonstration, about 65,000 gallons of contaminated groundwater from Site 9 was pumped from a series of monitoring wells and treated by the Zenon pervaporation system. Samples of untreated and treated water were collected and analyzed by EPA's SITE team to assess the performance of the technology. Preliminary results indicate that the Zenon technology was successful in removing trichloroethylene (TCE) from contaminated groundwater at a 99 percent removal efficiency (TCE concentrations were reduced on average from 200 milligrams per liter [mg/L] to less than 2 mg/L). The treated effluent was polished using activated carbon before it was discharged to the sewer. The Zenon technology has the potential for significantly reducing the amount of activated carbon required to treat contaminated groundwater and the remediation costs. The Navy shared the costs of conducting the field-scale demonstration with the EPA SITE Program. The total cost of the demonstration was about \$623,000, of which the Navy funded \$90,000, the EPA SITE Program funded \$370,000, and Zenon funded \$163,000. Based on the demonstration results, Zenon estimates treatment costs to range from \$2.00 to \$4.00 per 1,000 gallons of contaminated water, which represents a significant cost savings over traditional treatment systems.

BIBLIOGRAPHY

- **Fact Sheet:** [Zenon Cross- Flow Pervaporation Technology \(NELPFS-5.PDF, 549 KB\)](#)
- U.S. EPA. Site Technology Capsule, Zenon Environmental, Inc. Cross Flow Pervaporation System, EPA/540/R-95/511a. August 1995.
- U.S. EPA. Demonstration Bulletin, Zenon Cross Flow Pervaporation Technology, EPA/540/MR-95/511. June 1995.

UPDATED: 01/23/02